Complying with a Lower Arsenic MCL: Co-occurring contaminants and treatment options

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The co-occurrence of arsenic with other drinking water constituents may influence the feasibility of various treatment options and the costs and benefits of different regulatory policies. A statistical model of the joint occurrence and treatment of arsenic and six other drinking water constituents is used to explore the potential effects of such interactions. Significant co-occurrence trends are found between arsenic and uranium, which has the potential to modestly reduce compliance costs for these rules as both contaminants may be removed by the same treatment processes. On the other hand, the co-occurrence model also indicates that a substantial number of water supplies will not be able to use anion exchange treatment to comply with the arsenic and uranium MCLs due to sulfate interference. Modeling results indicate that predictions as to the future market share of specific technologies are highly uncertain, but a few qualitative guidelines as to where different technologies may have a comparative advantage are summarized.

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Speaker Biography

Patrick Gurian is an Assistant Professor of Environmental Engineering at Drexel University in Philadelphia. His interest in arsenic in drinking water began 8 years ago during his doctoral studies at Carnegie Mellon University where he developed statistical models of contaminant occurrence and regulatory compliance behavior. He is currently interested in novel adsorbent materials for arsenic and decision support for small utilities complying with the arsenic rule.